

What is claim d is:

1. A composite material comprised of a plurality of electrical excitation zone- treated, adhesive coated beads having average diameters between about 1 and about 10 mm and of which at least 50 percent are at least 50 percent coated with an adhesive and wherein a cured form of said adhesive has a hardness ranging from about Shore A 20 to about Shore A 95 and is used in a quantity such that it represents between about 20 and about 80 weight percent of the composite material and thereby serving to create a system of void spaces that constitutes from about 10 to about 40 volume percent the total volume of said composite material.
2. The composite material of claim 1 wherein the adhesive coated beads have average diameters between about 1 and about 4 mm.
3. The composite material of claim 1 wherein said beads are inelastic.
4. The composite material of claim 1 wherein said beads are elastic.
5. The composite material of claim 1 wherein said beads are made of polymeric materials selected from the group consisting of polyethylene, propylene and ethyl propylene copolymer.
6. The composite material of claim 1 wherein said system of void spaces is substantially comprised of substantially regularly distributed void spaces.

7. The composite material of claim 1 wherein the beads have diameters ranging from about 1 mm to about 4 mm.

8. The composite material of claim 1 wherein said beads are solid.

9. The composite material of claim 1 wherein said beads are hollow.

10. The composite material of claim 1 wherein said beads are made of a ceramic material.

11. The composite material of claim 1 wherein said beads are made from a glass material.

12. The composite material of claim 1 wherein said beads are made of a plastic material.

13. The composite material of claim 1 wherein the beads have one or more holes passing through their bodies.

14. The composite material of claim 1 wherein said beads are made of a thermosetting material.

15. The composite material of claim 1 wherein said beads are made of a thermoplastic material.

16. The composite material of claim 1 wherein the adhesive is made from a two part resin.

17. The composite material of claim 1 wherein the adhesive is made from a thermosetting synthetic resin.

18. The composite material of claim 1 wherein the adhesive is made from a thermoplastic synthetic material.

19. The composite material of claim 1 wherein said beads are of different sizes.

20. The composite material of claim 1 wherein said beads are comprised of a mixture of different kinds of beads.

21. The composite material of claim 1 wherein said beads are coated with a coupling agent to promote bead/adhesive bonding.

22. The composite material of claim 1 wherein said beads are electrical excitation zone-treated more than once to accomplish more than one kind of treatment.

23. The composite material of claim 1 wherein said beads are coated with a polymeric material by the action of an electrical excitation zone treatment.

24. The composite material of claim 1 wherein said beads are spherical.

25. The composite material of claim 1 wherein said beads are ellipsoid.

26. The composite material of claim 1 wherein said beads are made of different polymeric materials.

27. The composite material of claim 1 wherein said material is placed in a cloth-like casing.

28. The composite material of claim 1 wherein said material is placed in a net-like casing.

29. The composite material of 1 wherein said material is used in conjunction with a hard plastic, outer shell.

30. The composite material of claim 1 wherein at least 50 percent of the beads are at least 80 percent covered by the adhesive.

5 31. A composite construction material comprised of a plurality of electrical excitation zone treated, adhesive coated beads having average diameters between about 1 and about 10 mm and of which at least 50 percent are at least 50 percent coated with an adhesive and wherein a cured form of said adhesive has a hardness ranging from about Shore A 20 to about Shore A 95 and is used in a quantity such that it represents between about 20 and about 80 weight percent of the padding material and thereby serving to create a system of void spaces that constitutes from about 10 to about 40
10 volume percent the total volume of said composite construction material.

5 32. A water permeable, composite construction material comprised of a plurality of electrical excitation zone treated, adhesive coated beads having average diameters between about 1 and about 10 mm and of which at least 50 percent are at least 50 percent coated with an adhesive and wherein a cured form of said adhesive has a hardness ranging from about Shore A 20 to about Shore A 95 and is used in a quantity such that it represents between about 20 and about 80 weight percent of the padding material and thereby serving to create a system of void space that constitutes from about 10 to about

10 40 volume percent the total volume of said water permeable,
composite construction material.

5 33. A breathable, bead/adhesive/void space padding
material, said material being comprised of a plurality of electrical
excitation zone treated, adhesive coated beads having average
diameters between about 1 and about 10 mm and of which at least 50
percent are at least 50 percent coated with an adhesive and wherein
a cured form of said adhesive has a hardness ranging from about
Shore a 20 to about Shore A 95 and is used in a quantity such that it
represents between about 20 and about 80 weight percent of the
padding material and thereby serving to create a system of void
10 spaces that constitutes from about 10 to about 40 volume percent the
total volume of said padding material.

34. A polymeric bead whose surface is treated by virtue of
said bead being passed through an electrical excitation zone.

35. A polymeric bead having a diameter between about 1
mm and about 10 mm whose surface is treated by virtue of said
polymeric bead being passed through a hybrid plasma/corona
electrical excitation zone.